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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
DICUS, TAMRA	

ART UNIT	PAPER NUMBER
1774	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/776,427	WHITESIDES ET AL.	
	Examiner	Art Unit	
	Tamra L. Dicus	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-15,55-59 and 69-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-15,55-59 and 69-75* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The prior rejections over the Double Patenting are withdrawn due to Applicant's submission of the terminal disclaimers. The prior 102/103 rejections over Clark are withdrawn due to Applicant's arguments.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3-15, 55-59, and 69-75 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner believes there is no The Examiner believes that the claims do not have the proper support in the original specification as filed because the specification does not provide any teaching or discussion on second molecular species has a terminating end facing away from a surface or its usage with Applicant's claimed device/articles. Nothing found in the specificaitons leads one to construe a meaning that a second molecular species has a terminating end facing away from a surface.

Priority

This application repeats a substantial portion of prior Application No. 09/164,733 filed 10-01-1998 and 08/677,309 filed 07-09-1996 and adds and claims additional disclosure not presented in the prior application (the additional disclosure is to a first and second molecular

species that terminates in an end facing or exposed away from the surface; while there is language to first terminating end and an exposure to a second functionality found in the applications, however, nothing found in the specificaitons lead one to construe a meaning that a second molecular species has a terminating end facing away from a surface). Since this application names an inventor or inventors named in the prior application, it may constitute a continuation-in-part of the prior application. Should applicant desire to obtain the benefit of the filing date of the prior application, attention is directed to 35 U.S.C. 120 and 37 CFR 1.78.

Reference to this application as a continuation-in-part under 35 U.S.C. 120 is acknowledged. However, Applicant is not entitled to benefit of the earlier filing date because the the new part to a a first and second molecular species that terminates in an end facing or exposed away from the surface which is not set forth in the child cases (see text of USPN 5,512,131, 6,180,239, and Abandoned 08/397,635). See also MPEP 2133.01 to the following rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-15, 55-59, and 69 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,079,600 to Schnur et al.

Schnur teaches a patterned monomolecular assembly having a nonplanar substrate such as a palladium coated silicon wafer that exhibits excellent step coverage important in fabrication of the wafer used in semiconductor microlithography (Example 23, Abstract, Example 25). Schnur also teaches a second species - functional group terminating at an end away (the star and triangle shapes illustrated on the nonpolar tails in Figs. 1A and 1B) and another first molecular species silane molecule selected to bind the surface of the substrate (smallest circle touching the substrate surface) in a terminal end in a monomolecular self-assembling film being chemisorbed in the same way as Applicant (see Example 1, further to hydrophobic and hydrophilic functions, and 10:50-68). Schnur teaches microlithography (embraces all sizes less than 1 micron, overlapping Applicant's ranges) patterns are used explaining the pattern line widths having less than one micron (equivalent to lateral dimension) is suitable for microcircuit lithography (col. 1, lines 60-68, col. 5, lines 15-45, col. 6, lines 45-68, col. 8, lines 1-68, col. 9, lines 15-68, col. 10, lines 1-4, lines 40-65, col. 11, lines 5-20, FIGS. 1A-3B and associated text) suitable for patterning (instant claims 3-15, 55-59, and 69 are met).

Claims 70-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,079,600 to Schnur et al. in view of USPN 4,728,591 to Clark et al.

Schnur essentially teaches the claimed invention as applied to claim 69 above.

Schnur does not teach a patterning having the surrounded regions as recited (instant claims 70-75).

However, Schnur teaches microlithography patterns can be used from the background explaining the patterns having less than one micron is suitable for microcircuit lithography (cited above). Thus, because the cited claimed ranges are less than one micron, they fall within the prior art range.

Further, Clark explicitly teaches the required ranges are suitable in microlithography patterns. Clark teaches a device comprising: an article defining a surface (col. 2, line 32, e.g. substrate surface); and an isolated region of a self-assembled monolayer of a first molecular species having a function (col. 2, lines 49-55, e.g. a functional material deposited through holes such as a protein and enzymes molecules) surrounded by a second molecular species on the surface and terminating in the same way (e.g. at the ends of the pattern as per Applicant's specification-see [0053-0059]) (col. 2, lines 40-49, FIG. 2 and associated text, . two-dimensional self-assembled molecular array of protein and enzymes molecules). The isolated region in lateral dimension and area (encompassed by characteristic dimension) is between 1-50 nm (.01-.5 microns), meeting Applicant's range of less than about 10 microns, 5 microns, 1 micron, and 0.25 microns, less than 100 sq. microns, less than 25 microns, less than 1 sq. microns, and less than 0.06 microns, as the first material is surround by the pattern via the second molecular species, see col. 3, lines 56-59 and col. 4, lines 40-45. The terminations of the second molecular

species and the first being on and exposed away from the surface are defined by the pattern as shown in FIG. 2 and associated text, see where 20 is bound to 12, thus bind to surface 10 (col. 13, line 60-col. 14, lines 1-40, col. 14, lines 50-col. 15, line 30, cationic polylysine serve to bind to anionic ferritin). See also patented claims, Abstract, and col. 8, lines 1-5.

Thus, it would have been obvious to one having ordinary skill in the art to have modified Schnur because Schnur suggests microlithography patterns may be applied to the wafer and Clark teaches the wafer having the required microlithography patterns in nanoscale to produce complexes structures as cited above.

Claims 3-15, 55-59, 69-75 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Singhvi et al. (USPN 5,976,826).

Singhvi teaches a device comprising an article defining a surface (34 and 32, FIG. 1 and associated text); and an isolated region of a self-assembled monolayer of a first species on the surface (35, 32, ink binded to surface via chemisorbtion) surrounded by a second molecular species (38, FIG. 1 and associated text) of a SAM-forming compound like pallaidium or platinum, hydrophobic, hydrophilic, epoxy and others found at 8:15-68. Both first and second species have terminal ends (7:50-8:1-65) binding to the surface of a material having a variety of functions. The first and second surroundings are called "islands" in Singhvi and have sizes between 1 to 2500 square microns and lateral dimensions between 2-10 microns and may be smaller than the size of a cell, like less than 1mm and the size is also optimziable effecting the grid pattern (3:5-20, 11:24-50, 12:23-68, 13:1-15). There is no mention to terminal ends exposed or facing away, however because the same exposed patterning, first terminating ends and first

and second materials are employed as Applicant's instant specification (see [0088, 0053]), the way the ends face are inherently provided or expected to be provided. It would have been obvious to one having ordinary skill in the art to have modified Singhvi to have first and second species facing or exposed away because similar materials and exposure processes are employed. Claims 3-15, 55-59, 69-75 are met.

Response to Arguments

Applicant's arguments filed 04-29-07 have been fully considered but are moot in view of the new ground of rejection.

Applicant argues Schnur and its validity, see explicit teachings at: col. 10, lines 25-65 describing Figs. 1A-1B to the terminal ends and molecular species on the substrate, the same as Applicant. Applicant argues the palladium not being present, however Schnur teaches a nonplanar substrate such as a palladium coated silicon wafer, because it is coated, the substrate comprises palladium and the palladium itself acts as a substrate. Clark is still used to teach the surrounded pattern and sizes of instant claims 70-75. Applicant argues the references are not combinable, however, both teach monolayers on substrates in microcontact technologies and are analogous for the reasons set forth above.

Further to Applicants' argument that functional groups mean in the field of organic chemistry, Applicant has not provided a persuasive argument because the claims are interpreted broadly and while the term "functional groups" are found in organic, the term "functional groups" can mean any material (embraces group) that inherently has a function as those taught in the applied prior art above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamra L. Dicus whose telephone number is 571-272-1519. The examiner can normally be reached on Monday-Friday, 7:00-4:30 p.m., alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

June 28, 2007

Tamra L. Dicus
Examiner
Art Unit 1774

BRUCE H. HESS
PRIMARY EXAMINER
GROUP 1300